

Two new species of *Holoparasitus* Oudemans, 1936 from Europe (Parasitiformes: Parasitidae)

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ABSTRACT — Two new mite species, *Holoparasitus calpetanus* **n. sp.** from Gibraltar and *Holoparasitus fanes* **n. sp.** collected in the Dolomites (North-East Italy) are described. *Holoparasitus calpetanus* **n. sp.** is considered to be a member of the *Holoparasitus mallorcae* species-group. A new *Holoparasitus crassisetosus* species-group is defined; *H. fanes* **n. sp.** is morphologically close to this group.

KEYWORDS — new species; new species-group; taxonomy; Italy; Gibraltar

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INTRODUCTION

The genus *Holoparasitus* (Oudemans 1936) contains 55 species, including the two described in the present paper. These are predatory mites mainly inhabiting mosses and forest litter in the Holarctic region. Some taxonomic descriptions and revisions of type specimens have been published in recent years (Juvara-Bals and Witaliński 2000; Witaliński and Skorupski 2002, 2003a, b; Witaliński 2004; Juvara-Bals and Witaliński 2006; Witaliński 2006; Witaliński and Skorupski 2007; Juvara-Bals 2008). A character set in the genus *Holoparasitus* was well defined by Hyatt (1987). This large genus is not divided into subgenera, although more than half of the species have been allocated to six groups of species: *Holoparasitus annulus* group (2 species), *caesus* group (4), *hemisphaericus* group (2), *mallorcae* group (20), *peraltus* group (2), and *calcaratus* group

(7).

These groups have been defined and re-defined by various authors (Micherdziński 1969; Juvara-Bals 1975; Juvara-Bals and Witaliński 2000; Witaliński and Skorupski 2002, 2003b; Juvara-Bals and Witaliński 2006; Witaliński 2006; Juvara-Bals 2008). The newly described species *H. calpetanus* **n. sp.** and *H. fanes* **n. sp.** were collected in Gibraltar and Italy, respectively. Morphologically, *H. calpetanus* **n. sp.** belongs to the *Holoparasitus mallorcae* species-group defined by Juvara-Bals and Witaliński (2000) and Juvara-Bals (2008), ultimately comprised of 21 species, whereas *H. fanes* **n. sp.** is most similar to members of the newly defined *Holoparasitus crassisetosus* species-group.

The morphological terminology follows Hyatt (1987) and Juvara-Bals (2008).

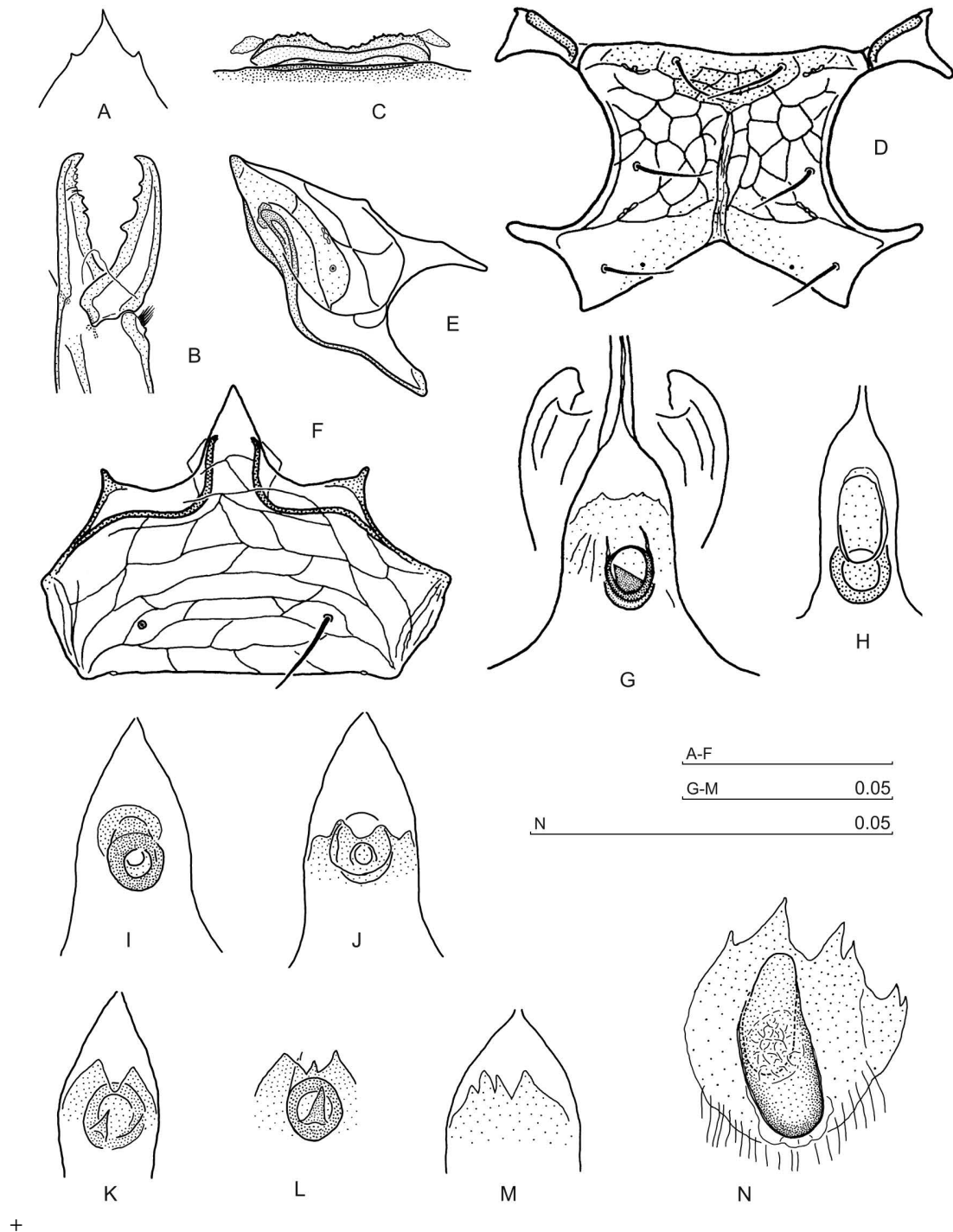


FIGURE 1: *Holoparasitus calpetanus* n. sp., female: A – Gnathotectum; B – Chelicera, adaxial aspect; C – Praesternal plate with lateral platelets; D – Sternal shield; E – Paragynium; F – Epigynum; G – Endogynium covered with endogynial lamella as visible between paragynia; H, I – Different aspects of endogynia, endogynial lamella not shown; J–L – Endogynium with endogynial lamella; M – Endogynial lamella, endogynium not shown; N – Dissected endogynium in dorsal perspective: this is a tube with a closed posterior tip directed *in situ* dorsally or postero-dorsally and with an anterior oval entrance. The endogynial lamella is visible below the endogynium as it covers the endogynium from the ventral side. A–G: slide no. 2486; H: slide no. 2488, specimen A; I, J: slide no. 2489; K: slide no. 2502; L: slide no. 2475; M: slide no. 2488, specimen B; N: slide no. 2487. Scale bars: A–F – 0.1 mm, G–N – 0.05 mm.

***Holoparasitus calpetanus* n. sp.**
(Figures 1, 2)

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Diagnosis — In both sexes gland pores *gv1* are present and pores *gv2* are located on the surface of the flat cuticle; the gnathotectum is trispinate. In the female, the anterior wavy margin of the presternal plate is finely dentate; sternal shield has a fine granular band running axially; the endogynium is a narrow, ventro-dorsally oriented tube, visible in ventral perspective as a very small ring between the posterior paragnathal lobes, sometimes open on one or both sides when the endogynial tube is obliquely oriented; the ventral margin of the endogynium in most specimens bears a triangular lamellar protrusion, located asymmetrically; ventrally, the endogynium is covered by a delicate endogynial lamella, dentate at the anterior margin. In the male, the corniculi have a prominent dent in the distal half; the hypostome has a narrow thickening ending anteriorly at the level of the corniculi bases; the pedipalpal femur bears a rectangular tubercle located anteroventrally, close to the anterolateral seta; the main spur on the femur II ends at the same level as the axillary process; spurs on genu II and tibia II are different, that on genu II is conical and close to the distal margin of the segment, that on tibia II is broad, low in the lateral perspective, and ending before the distal margin of the segment; the spur on tibia II has a margin shorter than its basal part.

Description

Female — Idiosoma brownish, $450 - 505 \times 690 - 730 \mu\text{m}$ (width range \times length range) ($n=3$). Length of podonotal setae: $39 - 44 \mu\text{m}$ (*j1*), $41 - 52 \mu\text{m}$ (*r3*), others $25 - 44 \mu\text{m}$; opisthonotal setae very short, $9 - 12 \mu\text{m}$; length of peritrematal groove $196 - 209 \mu\text{m}$.

Gnathosoma — Gnathotectum trispinate (Fig. 1A), corniculi conical. Hypognathal groove narrow, with *ca.* ten very indistinct rows of denticles. Palpcoxal setae finely pectinate, anterior hypostomal seta *h1* finely barbed, *h2*, *h3* simple. Chelicera (Fig. 1B). Fixed digit with 2-3 denticles in front and two behind pilus dentilis, movable digit with three teeth. Pedipalp trochanter with seta *v1* simple and *v2* barbed distally, setation of pedipalp

femur and genu unremarkable: seta *al* on pedipalp femur with pectinate posterior margin, setae *al1* and *al2* on genu spatulate, other setae simple.

Ventral idiosoma — Presternal plate (Fig. 1C) with a wavy and dentate anterior margin, posteriorly partly covered by the anterior margin of the sternum. Lateral platelets triangular or rhombic and free. Sternum (Fig. 1D) reticulated in the anterior part up to the level of pores *iv2*, anteriorly more pigmented, with a granular band of cuticle running axially; pores *gv1* in sternal shield near its posterior margin. Setae of sternogenital region: $38 - 44 \mu\text{m}$ (*st1*), $38 - 41 \mu\text{m}$ (*st2*), $29 - 33 \mu\text{m}$ (*st3*), $31 - 39 \mu\text{m}$ (*st4*).

Genital region — Paragnathal shields (Fig. 1E) reticulated, posterolateral protrusion short; metagnathal sclerite arcuate and narrow, thickening near coxa III not present. Epigynial shield (Fig. 1F) with central prong well developed, anterior subapical thickenings absent, posterior thickenings running parallel and continuing laterally to the concavities for coxa IV, lateral hyaline protrusions of subapical structure triangular, slightly extending beyond the central prong margins. Endogynium (Fig. 1G-N) tubular, *in situ* visible as a small ring (external/internal diameter $13 - 14 / 5 - 7 \mu\text{m}$), its opening usually guarded by asymmetric triangular lamella (Fig. 1G,K,L). When the tube is obliquely oriented to the vision axis, the ring is open on one side (Fig. 1H). Dissected endogynium (Fig. 1N) tubular with closed end directed more or less dorsally. Entrance of endogynium located ventrally and covered by endogynial lamella. The anterior margin of endogynial lamella is irregularly dentate (Fig. 1G, J-N). Gland pores *gv2* are located on the surface of the flat cuticle. Opisthogaster with eight pairs of ventral setae $21 - 42 \mu\text{m}$ long.

Legs — Leg structure and setation unremarkable.

Male — Idiosoma brownish, $380 \times 597 \mu\text{m}$ in holotype, $365 - 385 \times 585 - 640$ ($n=2$). Length of podonotal setae: $26 - 30 \mu\text{m}$ (*j1*), $28 - 30 \mu\text{m}$ (*r3*), others $16 - 25 \mu\text{m}$; opisthonotal setae short, $8 - 20 \mu\text{m}$; length of peritrematal groove $175 - 186 \mu\text{m}$.

Gnathosoma — Gnathotectum trispinate (Fig. 2A), corniculi with deep distal incision on the ven-

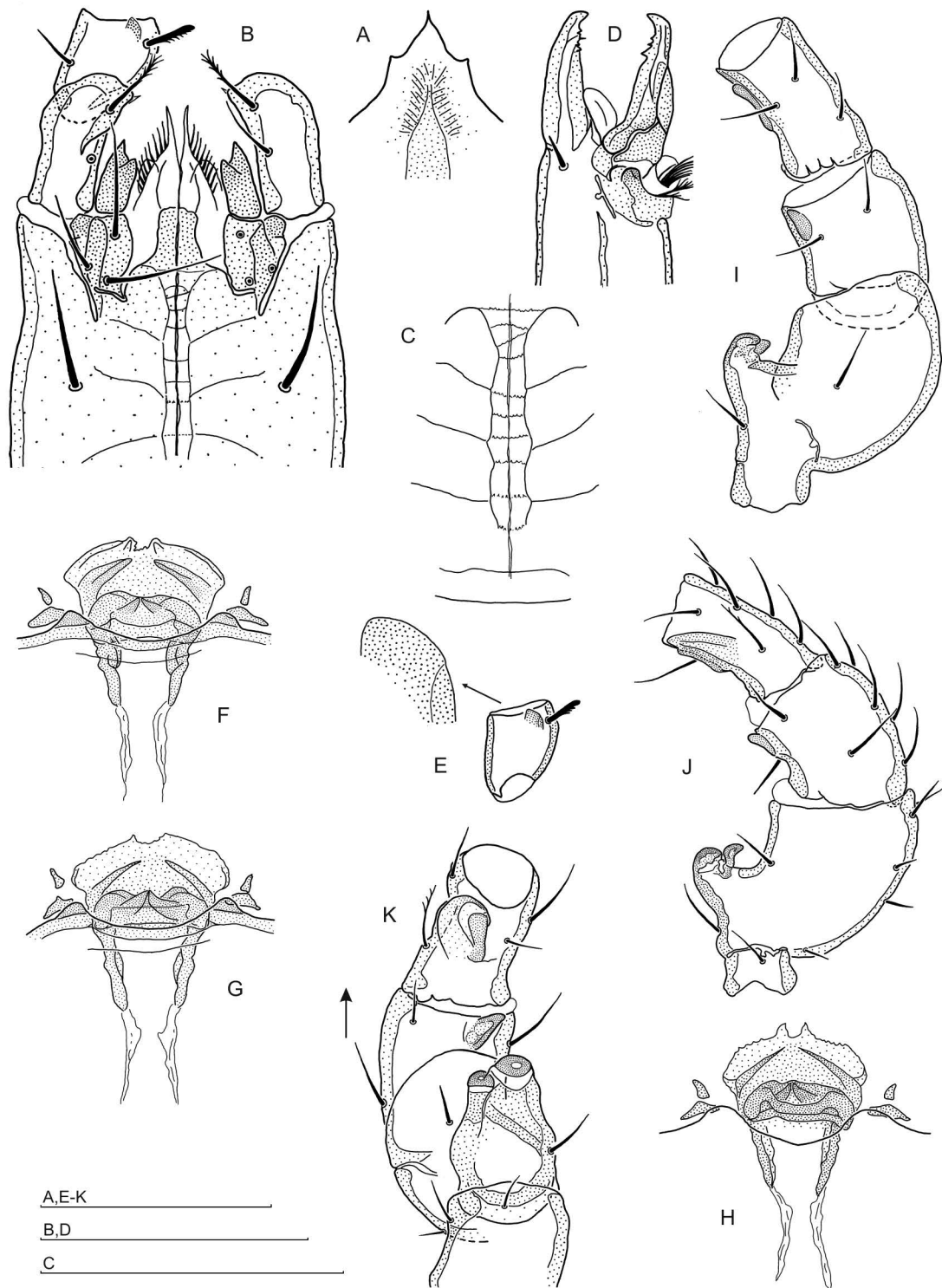


FIGURE 2: *Holoparasitus calpetanus* n. sp., male: A – Gnathotectum; B – Gnathosoma ventrally; C – Hypognathal groove; D – Chelicera, antiaxial aspect; E – Pedipalpal femur with tubercle; F–H – Genital laminae; I – Leg II (Fe, Ge, Ti), posterolateral aspect; J – *ibid.*, anterolateral aspect; K – *ibid.* ventral aspect, arrow on anterolateral side. A, B, E, F, I, K: slide no. 2489, holotype; C: slide no. 2053; D: slide no. 2477B; G: slide no. 2490; H: slide no. 2477D; J: slide no. 2477C. Scale bars: 0.1 mm.

troaxial side forming a very prominent dent (Fig. 2B). Hypostome with narrow thickening ending anteriorly at the level of the corniculi bases; hypognathal groove (Fig. 2C) as in the female, with ten fine rows of denticles. Palpcoxal setae finely pectinate, hypostomal setae simple. Chelicera (Fig. 2D). Fixed digit with a group of 3–4 denticles near pilus dentilis; movable digit bears three teeth. Pedipalp trochanter with seta *v1* finely pectinate and *v2* barbed; pedipalpal femur bears rectangular tubercle located anteroventrally, close to the anterolateral seta (Fig. 2E); pedipalp femur and genu setation unremarkable.

Ventral idiosoma — Presternal platelets (Fig. 2F–H) with two segments, anterior fine and sometimes curved, and posterior roughly triangular. Genital lamina (Fig. 2F–H) distinct, located in a concavity of the anterior sternal margin, which is flanked by tubercles on both sides. Anterior edge of lamina hyaline and bilobate, with two straight wedge-shaped thickenings directed towards central concavity in the anterior lamellar margin, lateral projections rounded, subgenital microsclerite well sclerotised, with two tooth-like thickenings apically meeting at the axial line. Sternogenital shield with distinct regular reticulation; excipulum absent. Sternal setae length: 33 – 39 μm (*st1*), 27 – 29 μm (*st2*), 27 – 38 μm (*st3*), setae *st4* 26 – 30 μm , opisthogaster setae 22 – 37 μm .

Legs — Leg I, III, IV unremarkable. Leg II (Fig. 2I–K) as follows: coxa II with a ridge of 5–6 denticles anterolaterally, accompanied by a basal denticle; the main spur on the femur ending at the same level as the axillary process; spurs on genu II and tibia II different, that on genu II conical and located close to the distal margin of the segment, that on tibia II broad, low in the lateral perspective and ending before the distal margin of the segment; its margin shorter than the basis as a result of the distally located incision (Fig. 2J).

Etymology — The specific name refers to Calpe, the original Latin name of the Rock of Gibraltar, the type locality of the species.

Material examined — Holotype male (slide no. 2489), 16.10.2014, Gibraltar, 36°7.621'N, 5°20.919'W, alt. ca. 115 m a.s.l., dry leaf litter beside street;

6 female and 1 male paratypes (slides no. 2486, 2487, 2488, 2489, 2490, 2502), *ibid.*; 1 female and 2 male paratypes (slides no. 2475, 2476, 2477A–D), 15.10.2014, 36°8.596'N, 5°20.795'W, alt. ca. 212 m a.s.l., dry leaf litter under bushes; 1 male paratype (slide no. 2053), 10.01.1997, Gibraltar, Alameda Botanic Gardens, approx. coordinates 36°7.890'N, 5°21.055'W, alt. ca. 37 m a.s.l., leaf litter under trees, leg. Prof. W. Niedbała, Adam Mickiewicz University, Poznań, Poland. Types are deposited in the Zoological Museum of the Jagiellonian University, Cracow, Poland.

Remarks — *Holoparasitus calpetanus* n. sp. belongs to the *Holoparasitus mallorcae* species-group, which is characterised as follows (Juvara-Bals 2008). In females, (1) presternal plate bears denticles or granules, especially at the anterior margin, lateral platelets free; (2) sternum with an axial reticulated or granular band; (3) the thickening of the anterior paragnathal edge facing coxa III absent; (4) fixed cheliceral digit with five denticles; (5) *gv2* in unmodified flat cuticle. The first two character states are usually present together, but in a few species only one of them is present. In males, (1) hypostome with the tongue-shaped, sclerotised central part, extended in many species antero-laterally between the corniculi; (2) hypostomatic setae on a piece of cuticle separated by incisions of soft cuticle; (3) sternogenital shield without an excipulum; (4) leg II: coxa II possesses anterolaterally denticulate ridge and a basal denticle, femoral main spur and axillary process thumb-like and short.

Holoparasitus calpetanus is included in the *Holoparasitus mallorcae* species-group since both females and males show all species-group character states. On the other hand, the female of *H. calpetanus* differs from other species belonging to the species-group by the following characteristics: in *H. algiersensis* Juvara-Bals, 2008 and *H. eivissa* Juvara-Bals, 2008 *gv1* glands are absent. *Holoparasitus calpetanus* differs from *H. siculus* (Berlese, 1906), as the central prong of the epigynium in this species is evidently elongate. In contrast to all other species of the *H. mallorcae* species-group, the endogynium in *H. calpetanus* is tubular and narrow, whereas in the remaining species it is large and sac-

cular. In the male, *H. calpetanus* differs from *H. algiensis* Juvara-Bals, 2008, *H. eivissa* Juvara-Bals, 2008 and *H. singularis* Juvara-Bals, 2008 since it possesses *gv1* glands. Compared to other species of this species-group *H. calpetanus* is most similar to *H. siculus* (Berlese, 1906), *H. mahnerti* Juvara-Bals, 2008, *H. mallorcae* Juvara-Bals, 1975 and *H. variabilis* Juvara-Bals, 2008. It differs from *H. siculus* (Berlese, 1906) by a gnathotectum with an acute central prong and regular lateral prongs, whereas from *H. mahnerti* Juvara-Bals, 2008 by the absence of a basal protrusion on the axillary process of femur II. Corniculi with prominent dents on their distal halves distinguish *H. calpetanus* from *H. mallorcae* Juvara-Bals, 1975 and *H. variabilis* Juvara-Bals, 2008, both showing corniculi with medium-sized dents on proximal halves.

***Holoparasitus fanes* n. sp.**
(Figures 3-5)

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Diagnosis — In both sexes gland pores *gv1* are present, and pores *gv2* are located in unmodified flat cuticle. In the female, the gnathotectum is trispinate, presternal plate is ribbon-shaped, only slightly narrowed medially, with obliquely cut ends, no denticles or corrugation are present; lateral platelets free and wedge-shaped; sternal plate reticulation pronounced, axial granular or reticulated band absent, anterior sternal margin concave between *st1* setae and frequently with small concavities laterally to sternal pores *iv1*; posterior paragnynial lobes in close proximity, metagnynial sclerite heavily sclerotised and located close to adaxial edge of paragnynium, its antiaxial margin straight whereas the adaxial margin forms a rounded protrusion matching the concavities in the anterior subapical thickening of the epigynium; epigynial central prong much wider than the subapical structure, which is narrow and anteriorly tripartite, with lateral hyaline protrusions rounded and extending slightly beyond the central prong margins; endogynium very small in ventral perspective, with heavily sclerotised roundish structure located centrally, and the lateral parts bearing minute denticles; anteriorly, endogynium forming a lamellar protrusion.

In the male, the gnathotectum the solid central prong is rounded apically, lateral prongs absent; corniculi conical; hypostome normal; hypognathal groove clearly visible; chelicera fixed digit straight and edentate with a characteristic lamellar protrusion laterally, movable digit solid and curved adaxially, bearing one dent; pilus dentilis minute, settled in orifice in lateral protrusion of fixed digit; palpcoxal setae scarcely pectinate and hypostomatics simple; palp trochanter with stout simple seta *v1* and longer seta *v2* barbed terminally, both setae located in close proximity and separated by a prominence; palp femur with ventral tubercle near the anterolateral seta; sternal shield with a regular reticulation except the roundish area between coxa II and coxa III, where the reticulation is weak and the cuticle porous; genital lamina rounded, located in a concavity of the sternal margin, and flanked by the sclerotised prominences; apical segment of femur II main spur circular in the ventral perspective, axillar process wedge-like, spur on genu II moderate, the one on tibia II – low, roundish and broad; genu II extended anterolaterally in the distal part.

Description

Female — Idiosoma brownish, 475-495 x 670-675 µm (width range x length range) (n=5). Length of podonotal setae: 26-30 µm (*j1*), 25-26 µm (*r3*), others 14-17 µm; opisthonotal setae very short, 8-12 µm; length of peritrematal groove 209-215 µm.

Gnathosoma — Gnathotectum trispinate (Fig. 3A), corniculi conical. Hypognathal groove narrow, with *ca.* ten weakly pronounced rows of denticles. Palpcoxal and hypostomatic setae simple. Chelicera (Fig. 3B). Fixed digit with two denticles in front of pilus dentilis, one larger and lamellar, covering pilus dentilis, and two small denticles behind pilus dentilis; the latter are located somewhat below the digit edge, which is lamellar and arcuate. The movable digit bears three teeth, pedipalp trochanter with seta *v1* simple, *v2* longer and barbed distally; femur and genu setation unremarkable.

Ventral idiosoma — Presternal plate (Fig. 3C) ribbon-shaped with obliquely cut ends and only slightly narrowed medially, and with a sinuous anterior margin, no denticles or corrugation present. Lateral platelets are free and wedge-shaped. Ster-

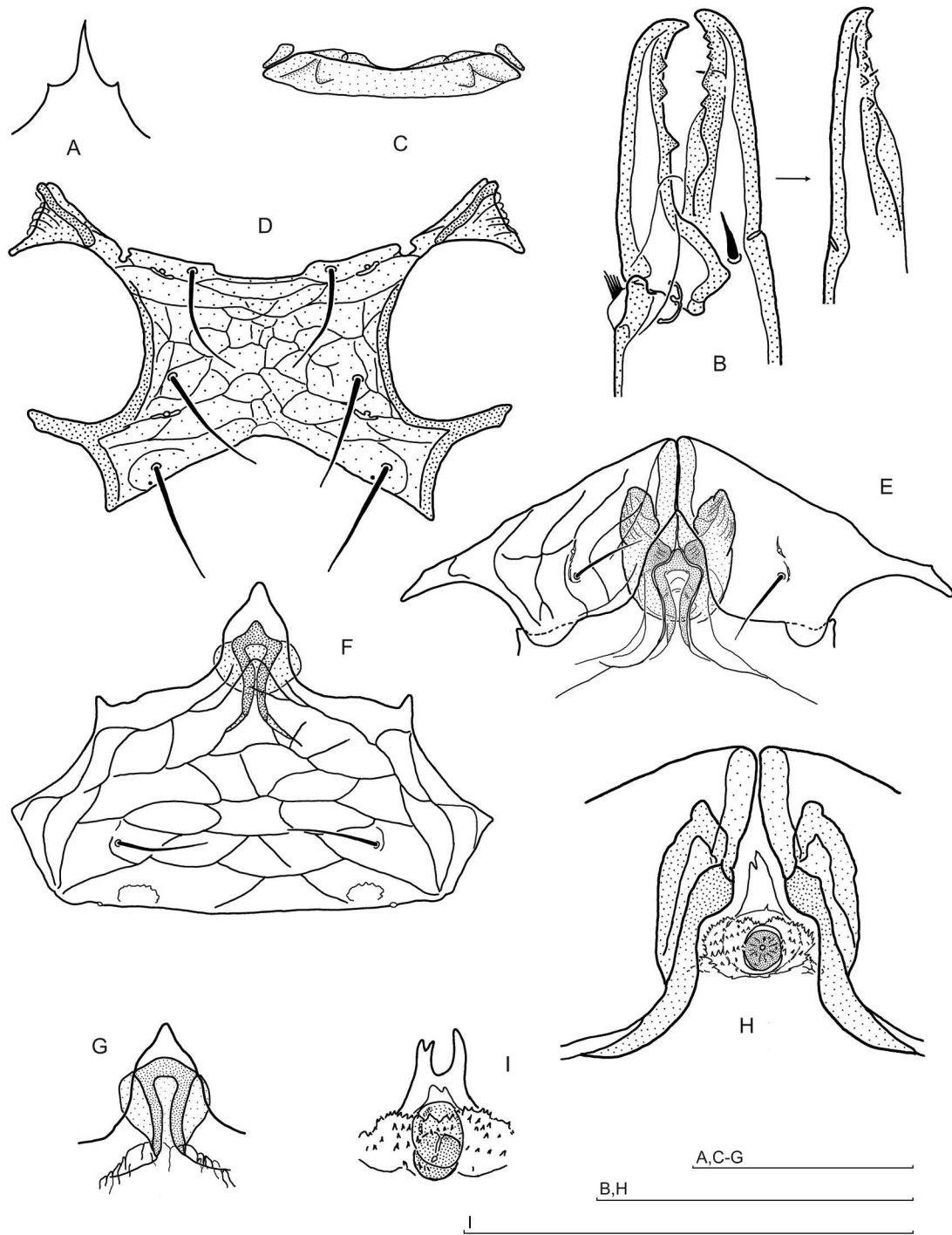


FIGURE 3: *Holoparasitus fanes* n. sp., female: A – Gnathotectum; B – Chelicera, antiaxial aspect and fixed digit in the lateroventral perspective; C – Praesternal plate with the lateral platelets; D – Sternal shield; E – Paragynial shields and apex of epigynum; F – Epigynum; G – Central epigynial prong with a subapical structure; H – Endogynium between paragynial adaxial borders; I – Endogynium. A,C,I: slide no. 1713; B: slide no. 1714, fixed digit slide no. 2002; D: slide no. 1641; E,F: slide no. 1620, holotype; G,H: slide no. 1714. Scale bars: 0.1 mm.

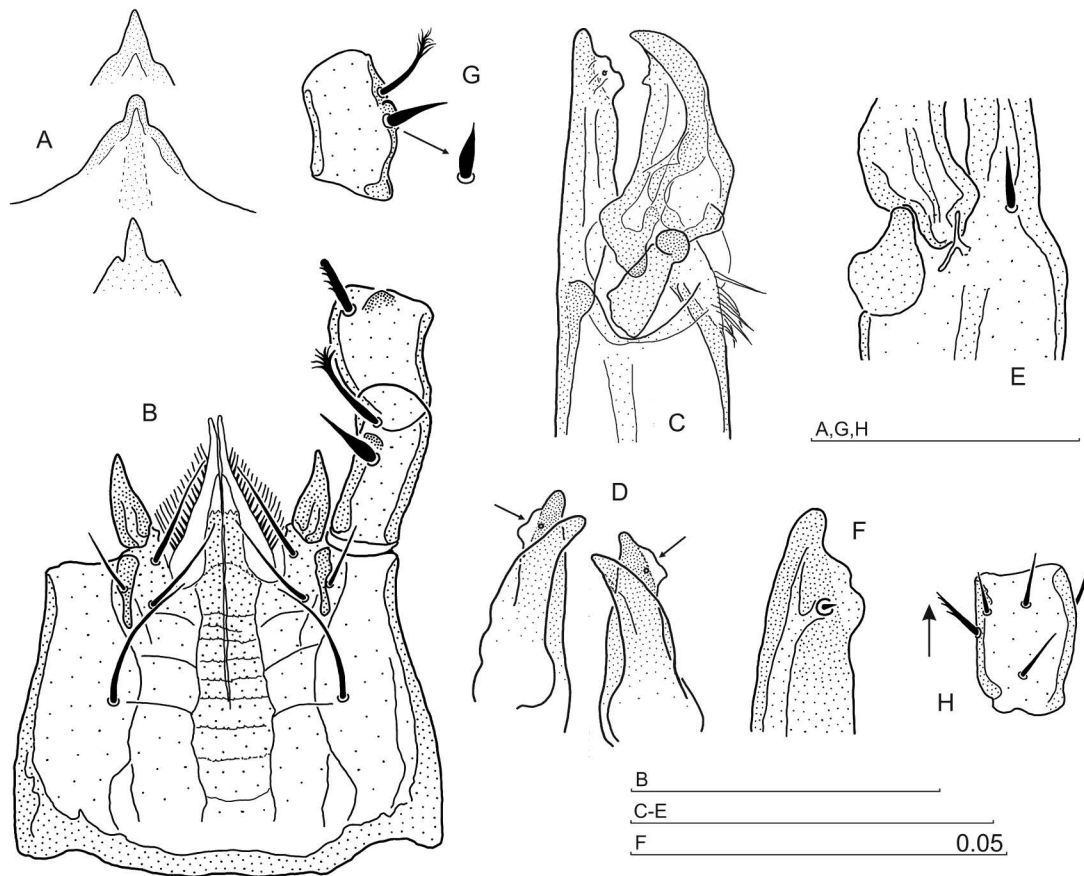


FIGURE 4: *Holoparasitus fanes* n. sp., male: A – Gnathotectum, different aspects; B – Gnathosoma, ventrally; C – Chelicera, adaxial aspect; D – Chelicerae tips in ventral perspective, arrows indicate orifices at the base of minute pilus dentilis; E – Basal part of cheliceral digits, antiaxial aspect; F – Tip of fixed digit showing pilus dentilis; G – Pedipalpal trochanter anterolaterally, seta *v1* also in ventral perspective; H – Trochanter I, arrow on anterolateral side. A: slides no. 1715, 1716, 2182; B, C: slide no. 2000; D–F: slide no. 1715; G: slide no. 1716, *v1* slide no. 2000; H: slide no. 2182. Scale bars: A–E, G, H – 0.1 mm, F – 0.05 mm.

nal shield (Fig. 3D) anterior margin with shallow concavity between *st1* setae and usually with small concavities laterally to *iv1* sternal pores, reticulation well developed. Pores *gv1* on sternal shield near posterior sternal margin. Setae of sternogenital region: 39 – 46 μm (*st1*), 50 – 59 μm (*st2*), 44 – 51 μm (*st3*), 33 – 39 μm (*st4*).

Genital region — Paragynial shields (Fig. 3E) reticulated, posterolateral protrusions well developed, roundish or sometimes asymmetrical. Posterior paragynial lobes in close proximity. Adaxial paragynial edge thickened and metagynial sclerite heavily sclerotised, located close to the adaxial paragynial edge; antiaxial margin of metagynial

sclerite straight or slightly curved, adaxial margin forming a rounded protrusion matching concavity in the anterior subapical thickening of the epigynium (Fig. 3E). Thickening facing coxa III is absent. Central prong of epigynium (Fig. 3F, G) with convex margins, wider than the subapical structure, which is narrow and anteriorly tripartite. Lateral hyaline protrusions are rounded and extend only slightly beyond the margins of the central prong. Endogynium (Fig. 3H, I) is small, with heavily sclerotised roundish structure located centrally and with the lateral, less sclerotised parts bearing minute denticles; anteriorly, endogynium forms a lamellar tongue-like protrusion directed anteriorly and fre-

quently indented apically. Gland pores *gv2* in unmodified flat cuticle. Opisthogaster with eight pairs of ventral setae 15 – 42 μm long.

Legs — Leg structure and setation unremarkable.

Male — Idiosoma brownish, 387 – 425 \times 580 – 640 ($n=5$). Length of podonotal setae: 26 – 29 μm (*j1*), 16 – 18 μm (*r3*), others 9 – 14 μm ; opisthonotal setae short, 10 – 12 μm ; length of peritrematal groove 199 – 207 μm .

Gnathosoma — Gnathotectum with a solid central prong rounded apically, lateral prongs absent, gnathotectum margins convex (Fig. 4A). Corniculi (Fig. 4B) conical. Hypostome normal, hypognathal groove rather wide, and ca. 10 rows of denticles moderately visible. Palpcoxal setae scarcely pectinate, hypostomal setae simple. Chelicera (Fig. 4C–F). Fixed digit straight and edentate with a characteristic lateral lamellar protrusion showing a small orifice at the base of minute pilus dentilis (Fig. 4D,F). The protrusion is clearly visible in the ventral perspective (Fig. 4D). Movable digit solid and curved adaxially; bearing one tooth, in some specimens followed distally by 1–2 minute denticles. Pedipalp trochanter (Fig. 4B,G) with stout seta *v1* and longer seta *v2* barbed terminally, both setae located in close proximity and separated by a small prominence. Pedipalp femur (Fig. 4B) with ventral tubercle near the anterolateral seta; both femur and genu setation unremarkable.

Ventral idiosoma — Presternal platelets small and roughly triangular (Fig. 5A). Genital lamina (Fig. 5B) roundish with sclerotised margin and heavily sclerotised subgenital microsclerite. The lamina is located in the concavity of the anterior sternal margin, flanked by the sclerotised tubercles on both sides of the concavity. Reticulation of the sternogenital shield (Fig. 5A) clearly visible laterally, but in central part between coxa II and coxa III weakly pronounced, and the sternal cuticle is porous. Excipulum absent. Sternal setae length: 34 – 39 μm (*st1*), 30 – 33 μm (*st2*), 31 – 35 μm (*st3*), setae *st4* 27 – 30 μm , opisthogastral setae 21 – 37 μm .

Legs — Leg I, III, IV largely unremarkable, with simple setae, but anterolateral setae on trochanter I and trochanter II, which are thicker and pectinate

distally (Fig. 4H). Leg II (Fig. 5C–E) spurred as follows: apical segment of femur II main spur circular in the ventral perspective, whereas the axillar process wedge-like; spur on genu II moderate, that on tibia II low, roundish and broad. genu II is extended anterolaterally in the distal part (Fig. 5D,E).

Etymology — The specific name refers to its type locality, Fanes in Val Travenanzes, Dolomites, Italy.

Material examined — Holotype female (slide no. 1620), 18.08.2001, Cortina d'Ampezzo, Dolomites, Italy, 46°34.329'N, 12°6.789'E, alt. ca. 1311 m a.s.l., moss on tree stump in a spruce forest near the road to Olympia Camping; 8 female and 12 male paratypes (slides no. 2000, 2001, 2002), 12.09.2005, Val Travenanzes, Dolomites, close to Fanes waterfalls (Cascade di Fanes), moss and litter in a spruce forest, 46°35.723'N, 12°5.185'E, alt. ca. 1455 m a.s.l.; 4 female and 4 male paratypes (slides no. 2162, 2163), 7.09. 2007, Val Travenanzes, Dolomites, litter and moss in a spruce forest, 46°35.127'N, 12°4.605'E, alt. 1635 m a.s.l.

Other material: 3 females, 4 males (slides no. 1640, 1641, 1713–1717), 10.09.2002, Cortina d'Ampezzo, Dolomites, near Olympia Camping, litter in a spruce forest, 46°34.329'N, 12°6.789'E, alt. ca. 1311 m a.s.l.; 1 male (slide no. 2011), 13.09.2005, near Olympia Camping, Cortina d'Ampezzo, Dolomites, thick layer of moss covering soil and logs in a spruce forest, 46°34.335'N, 12°6.746'E, alt. ca. 1320 m a.s.l.; 13 females, 24 males (slides no. 2179, 2180, 2182), 30.09.2008, near Dobbiaco, Dolomites, moss under trees, 46°41.520'N, 12°12.450'E, alt. ca. 1626 m a.s.l. Types are deposited in the Zoological Museum of the Jagiellonian University, Cracow, Poland, whereas the other material remains in the Author's collection.

Holoparasitus crassisetosus species-group, newly defined. Species included:

Holoparasitus crassisetosus Juvara-Bals and Witaliński, 2000

Holoparasitus digitiformis Juvara-Bals and Witaliński, 2000

Diagnosis of the species group — In both sexes (1) gnathotectum trispinate; (2) gland pores *gv1* present; (3) gland pores *gv2* located in unmodified flat cuticle. Female — (1) gnathotectum regularly

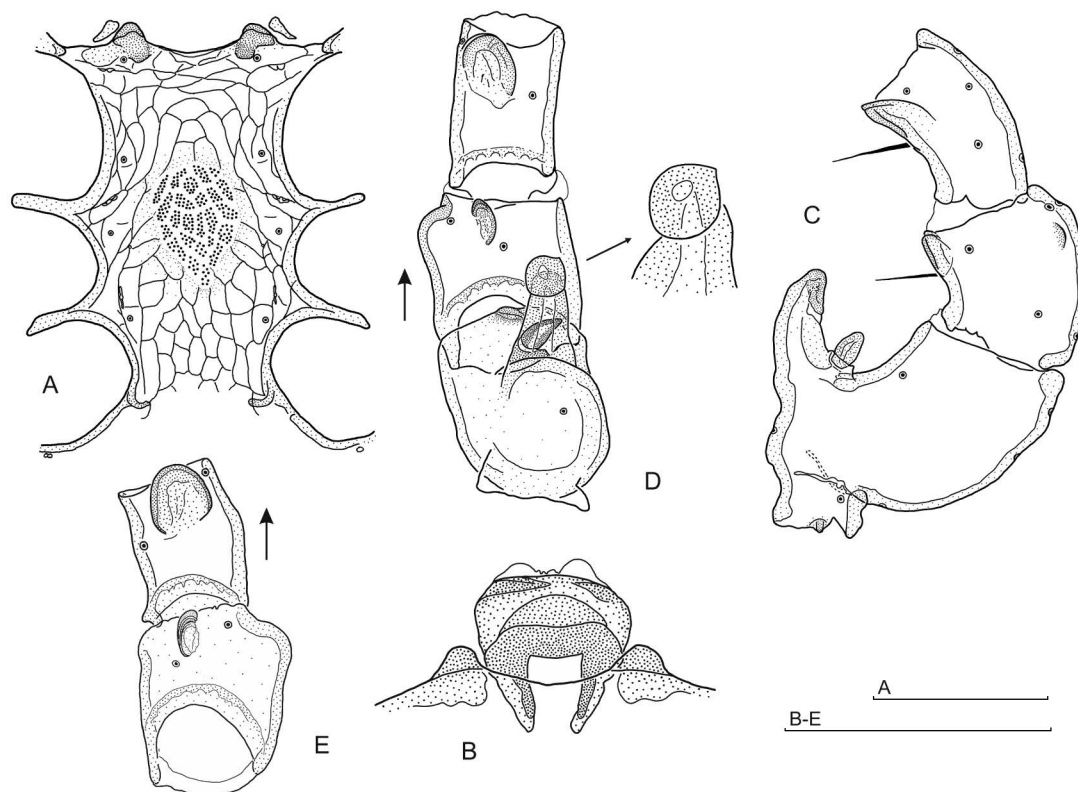


FIGURE 5: *Holoparasitus fanes* n. sp., male: A – Sternal shield; B – Genital lamina; C – Leg II (Fe, Ge, Ti), anterolateral aspect; D – *ibid.*, ventral aspect, arrow on anterolateral side; E – Leg II (Ge, Ti), ventral aspect, arrow on anterolateral side. A: slide no. 2001; B: slide no. 2179; C: slide no. 1640; D: slide no. 2002; E: slide no. 2000. Scale bars: 0.1 mm.

trispinate; (2) presternal plate with the anterior margin smooth, lateral platelets free, or one-sidedly accreted to presternal plate; (3) sternum entire, with regular reticulation, axial granular or reticulated band absent; (4) sternal anterior margin developed normally; (5) posterior paragynial lobes in close proximity to each other; (6) the thickening of the anterior paragynial edge facing coxa III present; (7) central epigynial prong moderate and triangular, the thickening of subapical epigynial structure well visible, compact, anteriorly rounded; (8) well sclerotised endogynium very small and roundish, with a protrusion directed dorsally. Male — (1) gnathotectum trispinate-type, but the central prong well pronounced and acute, whereas the lateral prongs minute; (2) hypostome regularly triangular and moderately sclerotised; (3) hypostomatic setae on entire cuticle, but not on the piece of cuticle separated by lateral and posterior soft-cuticular inci-

sions; (4) corniculi with a circular lamellar protrusion located adaxially; (5) excipulum on the sternum absent; (6) genital lamina with a well sclerotised subgenital microsclerite and long, acute hyaline lateral protrusions; (7) pedipalp trochanter with seta *v1* simple and thickened basally, seta *v2* barbed terminally; (8) pedipalp femur bears a ventral tubercle; (9) femur II spur conical, with a small terminal segment, axillary process settled on the slope of femoral spur; (10) spur on genu II small and semi-circular, located in the middle of the segment.

Distribution — Both species of this group are found in the central part of Italy, Tuscany, whereas *H. digitiformis* is also found in Sardinia (Juvara-Bals and Witaliński 2000).

Remarks — The new species *H. fanes* is most similar to the *H. crassisetosus* species-group. It shows all the character states shared by both sexes (1-3). The

females of *H. fanes* possess some characteristics of the group (1-5), but details of the genital orifice area are different. The males of *H. fanes* are similar to the *H. crassisetosus* group in gnathotectum and hypostome structure (1-3), sternum (5) and pedipalp (7, 8), but corniculi (4), genital lamina (6) and leg II structure (9, 10) are different.

The female of *H. fanes* can be distinguished from the *H. crassisetosus* species-group by the anteriorly tripartite, rather than rounded, thickening of the subapical epigynial structure. In the male, a porous area in the sternum center is present only in *H. fanes*. Moreover, the corniculi are conical and tibia II regularly spurred. These characteristics differentiate *H. fanes* from *H. inornatus* (Berlese, 1906) and *H. intermedius* (Holzmann, 1969), both species with indented corniculi. *H. megacalcaratus* Schmölzer, 1995 possesses conical corniculi, but with only a single, large main spur on femur II.

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